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International Specialists in the Environment

Atlantic Water
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9-25-87

MEMORANDUM

TO: Paul Doherty, RPO
Pete Culver, CERCLA PO

FROM: Philip Dula, E&E/FIT

DATE: September 25, 1987

SUBJECT: Preliminary Data Results for the Atlantic, Iowa Public Water Supply, Soil-gas Survey, A72Q F-07-8701-15/PAN #FIA0194SA Site #Z34 Project #001

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The U.S. Environmental Protection Agency (EPA) tasked the Ecology and Environment, Inc. Field Investigation Team (E&E/FIT), under Technical Directive Document (TDD) #F-07-8701-15, to conduct a soil-gas survey of the Atlantic, Iowa Public Water Supply. The soil-gas survey was conducted the week of August 23-28, 1987. This letter briefly summarizes the results of the investigation. The study area is depicted in Figure 1.

A sampling grid consisting of 75 points with a spacing interval of 200 feet was initially laid out over the study area. Initial soil-gas sampling concentrated at the former Iowa Department of Transportation (IDOT) Lab/Dry Cleaning Facility Location, a suspected source location of the tetrachloroethene (PCE) that has been detected since 1982 in the Atlantic Public Water Supply. Soil-gas sampling proceeded from this local, north-northwest in the direction of ground water flow toward wells #2, #3, #4, and #7. Two other possible contaminant sources were sampled in the sampling plan; the former bowling pin factory site and the former cooling pond location of the Atlantic Municipal Utilities (A.M.U).

Sampling locations were deleted or added as the soil-gas sampling progressed through the study area. As the plume boundary was delinated by negative sample results, perimeter soil-gas location beyond the plume boundary were not pursued. Sampling points were also reduced by electing to change the sample spacing to 400 foot intervals through the Sycamare Village Trailer Park and adjacent residential areas. Additional soil-gas sampling locations were added as in fill points in the "hot spot" area. Soil-gas samples were taken to a depth of 5 to 6 feet. A final sampling grid of 81 points was laid out; of these 55 points were sampled for the reasons mentioned above. Table 1 presents the field screening results of this study. Figure 2 illustrates the sampling plan and points sampled.

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It must be noted that the acquired data is field screening data which indicates general trends. Certain method modification in the analytical field methods have been made that reduce the level of confidence associated with the results.

Data results indicate that the source of tetrachloroethene (PCE) contamination is originating from a point source located in front of the Hardee's Restaurant. Sample points #5 and #77 had the highest observed concentrations of PCE with respective values of 119 ppb and 76.90 ppb. This area is directly east of the former IDOT Lab/Dry Cleaning Facility location where significant PCE concentrations where also observed. From the point source the PCE plume follows the local ground water flow direction and migrates through the shallow unconfined aquifer beneath the trailer park to water wells #7, #2, #3, and #4. The approximate dimensions of the PCE plume is 3,000 feet x 1,000 feet with an orientation of NW-SE (Figure 3).

It is suspected that the PCE originated from the site due west of the Hardee's Restaurant. This site was formerly host, over 20 years ago, to a dry cleaning facility, and most recently host to the IDOT Lab which has since moved to a new site east of Atlantic. This relocation occurred in the spring of 1986. The site is presently vacant. It is hypothesized that PCE inadvertently spilled at this site, traveled via the storm sewer system located along the south side of U.S. Highway #6 to a topographic low which is situated directly north of the Hardee's Restaurant. From this point as described previously the PCE has migrated north-northwest to the southern most Atlantic Public Water Supply wells, #7, #4, #3, and #2. Figure 1 illustrates the topography of Atlantic, Iowa, note the regional dip through the study area.

A more detailed report will be presented at a later date upon receipt of the analytical results of several soil samples taken in the "hot spot" area.

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Table 1
Preliminary Soil-Gas Results
Atlantic, Iowa
August, 1987

Sample #	Results in PPB	Sample #	Results in PPB
1	11.21	41	2.80
2	35.60	42	NST
3	0.03	43	0
4	0.39*	44	2.20
4A	0.70*	45	NST
5	119.0	46	1.20
6	NST	47	NST
7	0.30	48	NST
8	NST	49	0
9	NST	50	NST
10	NST	51	0
11	0	52	NST
12	0	53	0.50*
13	0	54	0
14	0	55	NST
15	0	56	0
16	0	57	NST
17	1.20	58	2.70
18	NST	59	1.20
19	0	60	0
20	6.20	61	0.80
21	5.30	62	2.70
22	NST	63	3.80
23	0.20	64	1.30
24	NST	65	2.90
25	0.10*	66	NST
26	0.10	67	0
27	NST	68	0.40
28	1.30	69	0.50
29	NST	70	4.30
30	0.50	71	NST
31	NST	72	0
32	2.10	73	0.20
33	NST	74	0
34	NST	75	NST
35	0	76	NST
36	0	77	76.9
37	0	78	3.60
38	0	79	0
39	NST	80	0.46
40	NST		

NST = No sample taken
* = Full vacuum release was not established in taking sample. This was due to high clay content in soil. Concentrations expected to be higher than field measurements indicate.

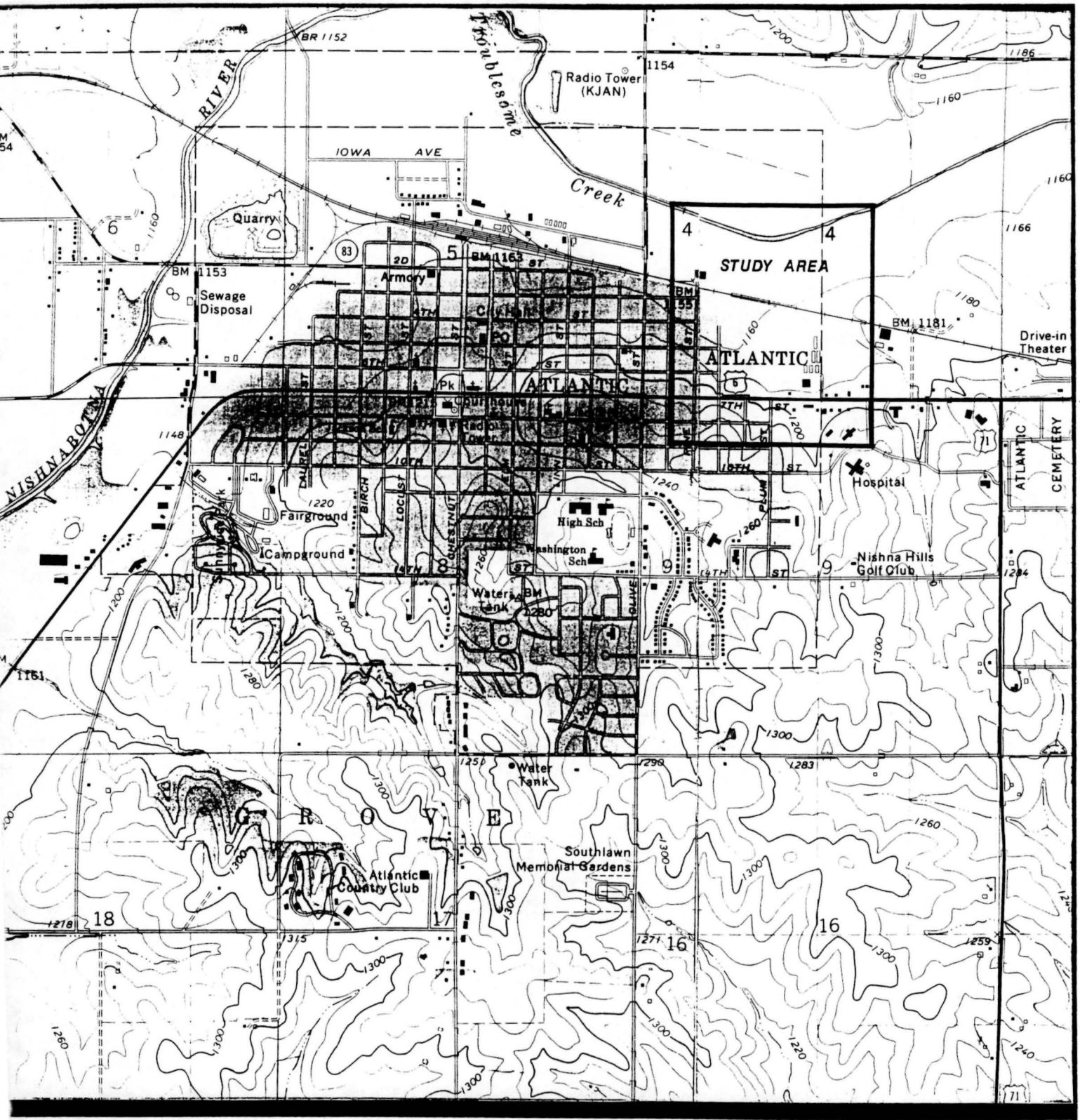

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FIGURE-1 SITE LOCATION, ATLANTIC, IOWA.

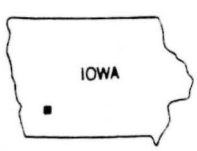
SCALE 1:24000

1 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 0 1 KILOMETER

CONTOUR INTERVAL 20 FEET
DATUM IS MEAN SEA LEVEL



SITE LOCATION

N

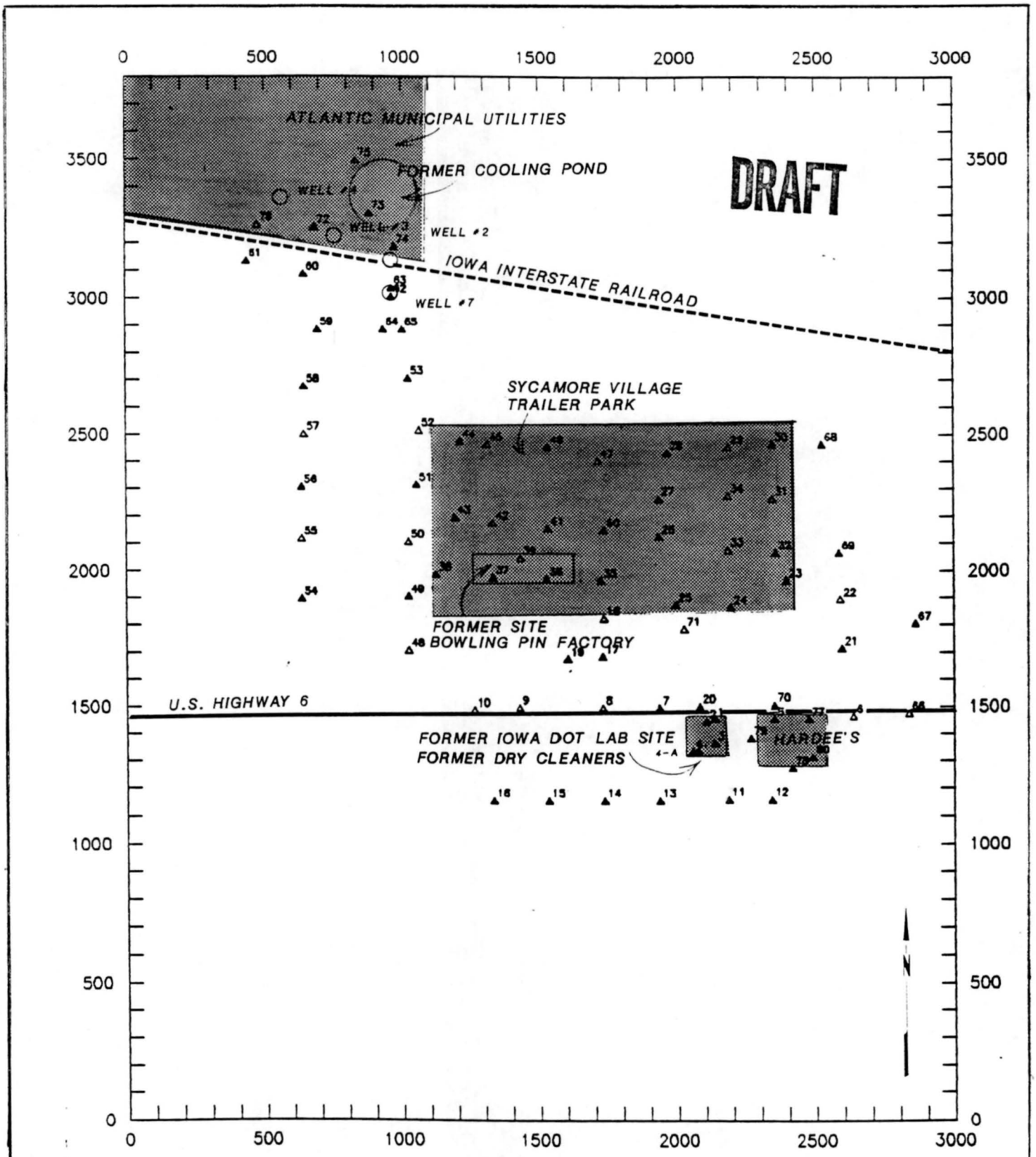


FIGURE-2 SOIL-GAS SAMPLE LOCATIONS, ATLANTIC, IOWA.

△ GRIDDED SAMPLE LOCATION
SAMPLE NOT TAKEN

▲ SAMPLE LOCATION

0' 250' 500' 1000' 1500'

SCALE 1"=500'

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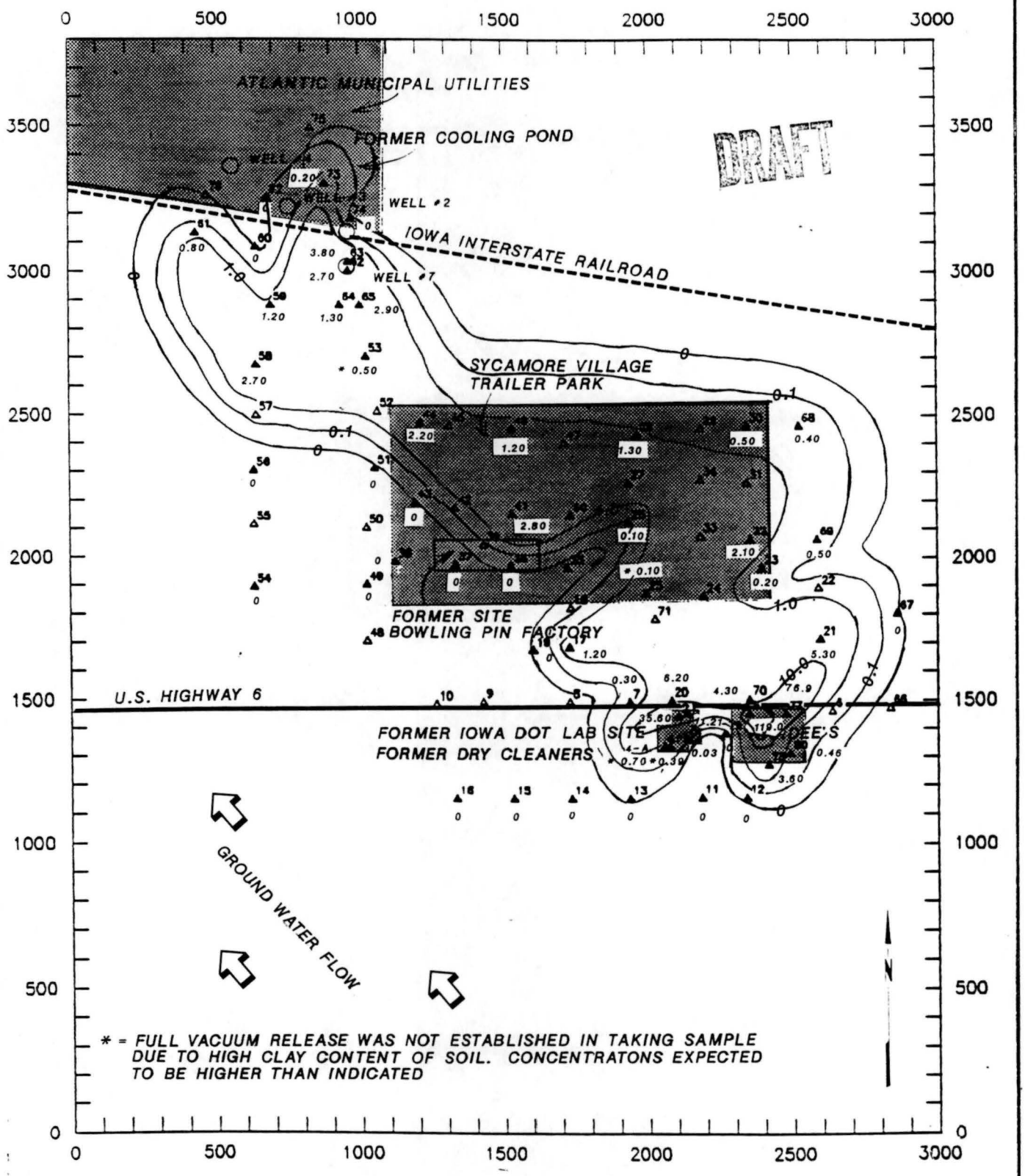

FIGURE-3 AREAL EXTENT OF PCE PLUME, ATLANTIC, IOWA.

△ GRIDDED SAMPLE LOCATION
SAMPLE NOT TAKEN

▲ SAMPLE LOCATION

0' 250' 500' 1000' 1500'

SCALE 1"=500'

PAN# FIA0194SA
TDD# F-07-8701-15

C.I.=10^X

CONCENTRATIONS IN PPB

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